REMARKS

Support for the amendments to Claims 18-20 can be found in cancelled Claims 30-32, respectively. Hence, the amendments to the claims do not constitute new matter, and thus entry is requested.

On page 2 of the Office Action, the Examiner notes Applicants' election of the invention of Group I, i.e., Claims 18, 21, 24, 27, 30 and 33, and the amendment of Claims 36-38 to make such dependent upon Claim 18.

Accordingly, Claims 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, 35 and 39-43 have been withdrawn from consideration, as being directed to a non-elected invention.

On page 3 of the Office Action, the Examiner rejects Claims 18, 21, 24, 27, 30, 33 and 36-38 under 35 U.S.C. § 103 as being unpatentable over Kitagawa et al and Makula, in view of Rawlings et al, Barrows and Fang et al.

Specifically, the Examiner states that Kitagawa et al teaches cultivating Artemia as a foodstuff for larvae of cultivated fishes, which feedstuff is a product obtained by breaking the cell wall of monocellular algae so that eisacopentaenoic acid and docosahexaenoic acid are in high dietary content.

Further, the Examiner states that Makula teaches examination of phospholipids of *Methylococcus capsulatus*, *Methylosinus trichosporium*, La Paz and OBT in relationship to their quantitative and qualitative composition.

The Examiner notes that Kitagawa et al and Makula do not teach the limitations of Claims 21 and 24, wherein the animals

are human and an adult piscine species, respectively. However, it is the Examiner's position that Barrows teaches a method for producing food particles of the desired size for use in production of human food articles; and Rawlings et al teaches a high lipid feed supplement which can be formulated into fish food. Further, the Examiner states that Fang et al teaches intact phospholipids profiles of seven species of methanotrophs.

The Examiner considers that it would have been *prima facie* obvious to combine and/or incorporate together the methods of Kitagawa et al and Makula with the teachings of Rawlings et al, Barrow and Fang et al to achieve the present invention.

For the following reasons, Applicants respectfully traverse the Examiner's rejection.

The present invention is based on the surprising finding that lipids produced by methanotrophic bacteria serve to reduce plasma cholesterol levels when used as part of the lipid intake in an animal's diet. More specifically, Applicants unexpectedly found that oral administration of methanotrophic bacterial lipids not only reduces plasma cholesterol levels, but also reduces the ratio of LDL:HDL cholesterol in the plasma of an animal. Given that the microbial lipids themselves do not contain appreciable amounts of docosahexaenoic acid (DHA), the higher levels of DHA observed in the blood plasma of animals fed with the microbial lipids are clearly not of dietary origin (see page 2, lines 16-28 of the present specification). This is considered to be significant and could not have been predicted by one skilled in the art.

Turning now to the references cited by the Examiner.

Kitagawa et al teaches feedstuff for Artemia which is obtained by breaking the cell wall of unicellular algae. The algae are selected from fresh water *Chlorellas*, marine *Chlorellas*, *Euglenophyceae*, *Diatomeae*, *Tetraselmis* and *Cyanophyceae* (see Claim 1 of Kitagawa et al). It is noted that the microbes recited in the present amended claims do not cover algae.

Artemia cultivated with the algae-derived feedstuff in Kitagawa et al were then used to feed larvae of fish or crustaceans. The wording of the abstract thereof makes it unclear whether the high amounts of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) refer to the feedstuff for the Artemia (i.e., the algae breakdown product) or the Artemia themselves (which are intended as feed for the larvae). However, it is clear from Table I thereof that it is the resulting Artemia themselves contain higher EPA and DHA contents than Artemia fed with other standard feedstuffs.

It appears that the Examiner considers the Artemia themselves constitute the "oral dosage composition comprising an effective amount of microbial lipids", as required by the present claims. That is, it appears that the Examiner believes the Artemia constitutes the feedstuff which is rich in the cholesterol reducing components EPA and DHA. However, neither the Artemia nor the EPA/DHA component thereof could be considered to comprise "methanotrophic microbial lipids", as required by the claims of the present application. Microbial lipids are clearly defined in the application as lipids produced by microbes (page 1 lines 31-32 of the present specification).

At page 7 of the Office Action the Examiner also states that Kitagawa et al teaches "the central issue of invention via the disclosure of administration to juvenile fish". Presumably the Examiner believes that Kitagawa et al teaches a method for reducing plasma cholesterol. However, there is no evidence of cholesterol reduction in the juvenile fish, nor any reason to expect it. As noted previously, reduction of cholesterol levels is central to Applicants' invention.

Even if the feeding of Artemia to fish larvae as taught by Kitagawa et al would inherently result in reduction of the fish larvae's cholesterol levels, the method (feeding juvenile fish) does not involve an oral dosage composition according to the claims, and so is not considered relevant to the present invention. Notably, methanotrophic bacteria are not mentioned at all in Kitagawa et al.

Makula relates to an investigation into the phospholipid content of *M. Capsulatus*, among others. Makula shows that the microbial lipids obtained from *M. Capsulatus* comprise phosphatidylethanolamine, phosphatidylglycerol, cardiolipin, phosphatidylcholine and C16:1/C16:0 esterified fatty acids. However, Makula does not suggest any use for the phospholipids which they report.

Accordingly, Applicants respectfully submit that the present invention is not taught or suggested in Kitagawa et al or Makula, and for the following reasons it is clear that Rawlings et al, Barrows and Fang et al do not provide the deficiencies which exist therein.

Rawlings et al discloses a method for microencapsulating lipids within proteins to form lipid-containing foodstuffs. As

disclosed therein, the production of low cholesterol food products is obtained (see column 2, lines 46 thereof). Rawlings et al does not teach a food that reduces cholesterol or maintains a low cholesterol level, as required by the claims of the present application. Moreover, the low cholesterol food mentioned in Rawlings et al is merely in connection with the fact that the invention of Rawlings et al allows lipids to be microencapsulated, thus improving palatability; it is not concerned with using any lipids of microbial origin, as claimed in the present invention,. Indeed, the lipids of Rawlings et al are animal fats and vegetable oils (see column 3, line 27 thereof). Rawlings et al does not teach or suggest a method for reducing plasma cholesterol in animals, as claimed in the present application.

Barrows merely discloses a method for producing particles of a desired size. The particles may be intended for a variety of uses, including larval fish food, pharmaceutical uses or food for human consumption. Thus, Barrows does not teach or suggest the present invention.

Fang et al, like Makula, is concerned with the phospholipid profiles of methanotrophic bacteria. Fang et al does not suggest any use for the phospholipids which they report.

Applicants respectfully submit that the Examiner has failed to establish any motivation for combining the various references. In any event, even if those skilled in the art were motivated to make the various combinations suggested by the Examiner, they would not arrive at the claimed invention, namely that of using methanotrophic bacterial lipids to reduce plasma cholesterol. None of the cited references is concerned with

methods for reducing cholesterol. Makula and Fang et al merely report analyses of the lipid content of methanotrophs, without any hint at what they could be used for. Barrows is of limited relevance; it does not disclose anything to do with microbes, nor cholesterol management and seems only to have been cited as a tenuous link between the fields of human food and fish food (Barrows discloses a method which can used for both).

Regarding Rawlings et al, the Examiner has simply picked several unlinked disclosures without taking note of the context of the overall document. For example, the Examiner tries to use the mention of low cholesterol foods (from a document mainly dealing with meat products) in Rawlings et al to link this entire document to Kitagawa et al, which suggests an end use for its product (feeding of the Artemia to juvenile fish), which may or may not involve cholesterol reduction. Moreover, as discussed above, there is no mention of microbial lipids in Rawlings et al, i.e., the lipids in Rawlings et al are animal or vegetable oils.

In summary:

- There is no disclosure in Kitagawa et al of microbial lipids according to the claims, nor of a method for reducing cholesterol.
- Barrows merely discloses a method for producing particles of a desired size.
- Rawlings et al is not concerned with using microbial lipids, nor is it a disclosure of a method for reducing plasma cholesterol in animals.

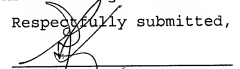
- Makula and Fang et al recite the phospholipid profiles of methanotrophic bacteria. Neither document suggests any uses for the phospholipids which they report.

Accordingly, Applicants respectfully submit that the present invention is not taught or suggested in Kitagawa et al and Makula, alone or in view of Rawlings et al, Barrows and Fang et al. Thus, Applicants request withdrawal of the Examiner's rejection.

In view of the amendments to the claims and the arguments set forth above, reexamination, reconsideration and allowance are respectfully requested.

The Examiner is invited to contact the undersigned at the below listed number on any questions which might arise.

Respectfully submitted,



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